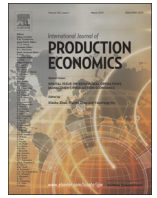




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Innovating through services, co-creation and supplier integration: Cases from China

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ABSTRACT

To develop and gain competitive advantage, Chinese manufacturers are innovating by developing solutions that include both tangible and intangible components. Service-dominant logic, which views supply chains as co-creation and resource integration networks, provides a useful perspective for investigating the roles of services, suppliers and customers in innovation. This study empirically explores how innovations are developed through services, co-creation with customers and supplier integration in China. This study uses an exploratory multiple-case-study approach. The data collection involves six manufacturing firms from the Pearl River Delta in China. We empirically identify two types of services (support services and solution services), two methods of co-creation (information acquisition and co-production) and two types of integration (internal integration and supplier integration). This study finds that support services and internal integration positively associate with information acquisition from customers. Solution services require both supplier integration and co-production with customers. This study contributes to the literature by providing empirical evidence on the roles of services in innovation and how to acquire resources and knowledge that is critical for innovation through collaboration with supply chain partners. The findings also provide guidelines to managers on how to use services, co-creation and integration to innovate efficiently and effectively.

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1. Introduction

In the last decades, Chinese manufacturers compete in the global market through low-cost production and China has become the world's manufacturing powerhouse (Zhao et al., 2006). However, the cheap China is ending because of the soaring labor and land costs, especially in the coastal provinces (Economist, 2012, 2015). The raising salary also produces demanding and sophisticated customers (Dodge, 2009; Zhang et al., 2011). A growing number of Chinese manufacturers are exploiting high value activities (Economist, 2015) and relying on innovations to fulfill the special demands of local customers (Breznitz and Murphree, 2011; Dodge, 2009). Due to the lack of market-supporting institutions, such as legal inadequacy, enforcement inefficiency and dysfunctional competition, the appropriability regime is weak (Teece, 1986) and it is difficult for Chinese manufacturers to

protect intellectual property rights and profit from groundbreaking inventions (Wang et al., 2011a; Zhou and Poppo, 2010). Compared to Western innovators, the majority of Chinese manufacturers lack advanced knowledge and technologies for radical innovation. Chinese manufacturers tend to apply incremental innovation by localizing and improving Western products and technologies (Breznitz and Murphree, 2011). For example, Tencent and Alibaba have successfully adapted Western business models, technologies and products to the Chinese market (Economist, 2012). Huawei also innovates by combining existing technologies and devising products with nifty new features for local customers (Economist, 2012). As stated by Huawei's senior managers, "[Innovation is] not to win Nobel prizes, or plaudits in the media for the 'coolness' of its products, but to create value for customers" (Economist, 2014).

Services play a critical role in such innovations since they help manufacturers to localize Western products to the Chinese market, meet customer individualized needs and differentiate themselves from competitors and hence have become an important source of profits for the manufacturers (Chae, 2012; Dodge, 2009; Economist, 2015; Sampson and Spring, 2012). Chinese manufacturers

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innovate by adding intangible components to their imitated products to provide new features with low costs (Zhou, 2006). Their innovations are thus based on solutions, which are integrated and marketable packages of products and services that are capable of jointly fulfilling customer needs and delivering value-in-use (Baines et al., 2009). Such innovations require manufacturers to collaborate with suppliers and customers to acquire resources and knowledge, generate new product and service ideas and develop responsive and flexible supply chains (Chae, 2012; Wang et al., 2011a; Zhang and Chen, 2008). Researchers have pointed out that services are positively related to performance (Parasuraman et al., 1988) and interactions with consumers facilitate new service development (Menor et al., 2002) in service industries. There is some empirical evidence that integration with supply chain partners enhances a firm's performance (e.g. Chen et al., 2004; Lai et al., 2012; Wong et al., 2013). However, there is a lack of empirical studies on the roles of services in innovations in manufacturing firms and how to develop solutions by collaborating with suppliers and customers in China (Lusch, 2011).

Service-dominant logic (SDL) offers a fresh perspective to investigate the roles played by services, suppliers and customers in innovation (Hallikas et al., 2014; Vargo and Lusch, 2004). SDL indicates that innovations are service processes and can be developed through the collaboration between manufacturers and supply chain partners (Sampson and Spring, 2012; Vargo and Lusch, 2008; Zhang and Chen, 2008). The objective of this study is to empirically explore how innovations are developed through services and supply chain management in China. It aims to address the following two research questions. First, what are the roles of services in innovation? Second, how are the resources and knowledge that are critical for innovation acquired through collaboration with supply chain partners?

2. Theoretical background

2.1. Innovation and solution

Innovation refers to the new applications of knowledge, ideas, methods and skills that can generate better solutions to meet customer needs and market demands (Garcia and Calantone, 2002; Gunday et al., 2011). Innovations thus can be upgrades or extensions of existing products (Kim et al., 2012). As Chinese manufacturers rarely introduce products that incorporate substantially different technologies from that now in use (Breznitz and Murphree, 2011; Economist, 2012), we focus on the incremental innovations that develop new features, benefits or markets

for existing products or new applications of existing technologies (Garcia and Calantone, 2002; Valle and Vazquez-Bustelo, 2009). Chinese manufacturers may copy and adapt Western products and technologies and develop new features to fulfill local customers' unique requirements (Zhou, 2006). These innovations are new to firms and local customers, but may not be new to the global market (Garcia and Calantone, 2002). Services play a significant role in refining, enhancing and localizing imitated products and in improving certain dimensions of product features (Baines et al., 2009; Chae, 2012). Manufacturers thus can innovate by introducing solutions that include new or customized services and imitated products (Craighead et al., 2009; Valle and Vazquez-Bustelo, 2009; Wang et al., 2011a).

A new solution can be an offering that is not previously available to a manufacturer's customers and a result from either additions or changes to the current mix of products and services (Baines et al., 2009; Wang et al., 2011b). Solutions focus on functionalities and benefits delivered through complementary and mutually supportive products and services and by selling utility and performance (Barquet et al., 2013; Wang et al., 2011b). Solution based innovations are different from new product development as the service components have the characteristics of spontaneity, heterogeneity, intangibility and perishability (Wang et al., 2011b). Customers also interact with service providers during the delivery of a service (Menor et al., 2002). Services thus can be the value-adding features of an innovation (Hallikas et al., 2014). The product-service systems literature argues that services may play different roles in a solution (Baines et al., 2009; Datta and Roy, 2011). Services, such as maintenance, advice and consultancy, can improve the durability and value of products, supporting the sale of tangible products. Services can also resolve issues related to customers' operations and the achievement of goals (Hallikas et al., 2014). Such services enable a manufacturer to sell a solution to enhance customers' value creation and supply chain management (Baines et al., 2009; Chae, 2012). Studies have investigated the tools or techniques that help manufacturers to design and deliver solutions (e.g. Datta and Roy, 2011; Wang et al., 2011b). However, there is a paucity of empirical evidence that provides guidance on the roles of services in innovation and how to collaborate with suppliers to develop solutions (Barquet et al., 2013).

2.2. Service-dominant logic and research framework

SDL proposes 10 fundamental premises (FPs) (Table 1) (Vargo and Lusch, 2008) that provide a basis for exploring how to develop solutions and innovations collaboratively with suppliers and customers. In particular, SDL argues that knowledge and competence are the essential components of value creation (FP4) and sources

Table 1
Service-dominant logic foundational premises. Source: Vargo and Lusch (2008 p.7).

Fundamental premises (FPs)	Innovation from a SDL perspective
FP1 Service is the fundamental basis of exchange.	Innovation should focus on solutions that include both tangible products and intangible services.
FP5 All economies are service economies.	
FP2 Indirect exchange masks the fundamental basis of exchange.	Services enable a manufacturer to fulfill customer demands innovatively using imitated or existing products.
FP3 Goods are a distribution mechanism for service provision.	Manufacturers must acquire and apply knowledge and skills from customers and other partners for innovation.
FP4 Operant resources are the fundamental sources of competitive advantage.	Manufacturers must involve customers in solution design, development and delivery.
FP6 The customer is always a co-creator of value.	Customers may play different roles in innovation.
FP7 The enterprise cannot deliver value, but only offer value propositions.	Services enable a manufacturer to acquire knowledge from and create knowledge together with customers.
FP8 A service-centered view is inherently customer oriented and relational.	
FP9 All social and economic actors are resource integrators.	Besides customers, manufacturers must integrate resources and knowledge from their supply networks, including suppliers and co-suppliers, for innovation.
FP10 Value is always uniquely and phenomenologically determined by the beneficiary.	The innovativeness of solutions, products and services is determined by customers.

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